WHAT IS CLAIMED IS:

1 A stator support structure for an electric rotary machine, comprising:

a divided-coil type stator including a plurality of divided stator cores and a plurality of stator coils wound around the stator cores, respectively;

a first rotor disposed inside the divided-coil type stator;

a second rotor disposed outside the divided-coil type stator;

a first stator support member supporting one side of the divided-coil type stator; and

a second stator support member supporting the other side of the divided-coil type stator;

wherein the divided-coil type stator, the first and second rotors are rotatably disposed in a concentric relationship to form a three-layer structure, and both distal ends of the respective stator cores are rigidly supported with the first and second stator support members with a given equal distance.

2. A stator support structure for an electric rotary machine according to claim 1, further comprising:

a plurality of positioning projection members which are located between the first and second stator support members and each of which remains between the adjacent stator cores to allow the stator cores to be positioned with the equal distance.

3. A stator support structure for an electric rotary machine according to claim 2, wherein each of the positioning projection members has a length extending between the first and second stator support members.

4. A stator support structure for an electric rotary machine according to claim 2, wherein each of the divided stator cores is press fitted between the adjacent positioning projection members.

5. A stator support structure for an electric rotary machine according to claim 1, wherein the stator cores are integrally supported with and coupled to the first and second stator support members by means of a plurality of fixing pins.

6. A stator support structure for an electric rotary machine according to claim 1, wherein the first and second stator support members are made of a material having nonmagnetic and high heat conducting properties.

7. A stator support structure for an electric rotary machine according to claim 1, wherein each of the first and second stator support members has a flow passage for passing coolant medium.

8. A stator support structure for an electric rotary machine according to claim 2, wherein each of the positioning projection members is integrally formed with one of the stator support members.

9. A stator support structure for an electric rotary machine according to claim 2, wherein the first and second stator support members and the positioning projection members have flow passages to allow coolant medium to flow.

10. A stator support structure for an electric rotary machine according to claim 2, wherein each of the stator coils is held in tight contact with adjacent surfaces of the first and second stator support members and the adjacent positioning projection members.

11. A stator support structure for an electric rotary machine according to claim 1, wherein each of the stator cores has a flow passage, receiving each of fixing bolts for fixing the stator cores, which is treated with a sealing material to form a flow passage for passing coolant medium.

12. A stator support structure for an electric rotary machine according to claim 2, wherein each of the stator cores is held in tight contact with the first and second stator support members and the positioning projection members.

13. A stator support structure for an electric rotary machine, comprising:

a divided-coil type stator including a plurality of divided stator cores and a plurality of stator coils wound around the stator cores, respectively;

a first rotor disposed inside the divided-coil type stator;

a second rotor disposed outside the divided-coil type stator;

first stator support means for supporting one side of the divided-coil type stator; and

second stator support means for supporting the other side of the divided-coil type stator;

wherein the divided-coil type stator, the first and second rotors are rotatably disposed in a concentric relationship to form a three-layer structure, and both distal ends of the respective stator cores are rigidly supported with the first and second stator support means with a given equal distance.